

### **OIL ANALYSIS REPORT**

Sample Rating Trend





Machine Id **4704M** Component **Diesel Engine** 

PETRO CANADA DURON SHP 15W40 (--- GAL)

## DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Fluid

#### Wear

All component wear rates are normal.

#### Contamination

There is no indication of any contamination in the oil.

### Fluid Condition

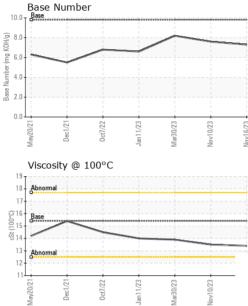
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0101602	GFL0101565	GFL0073933
Sample Date		Client Info		16 Nov 2023	10 Nov 2023	30 Mar 2023
Machine Age	hrs	Client Info		13100	13039	11008
Oil Age	hrs	Client Info		13039	11008	10399
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>75	19	19	17
Chromium	ppm	ASTM D5185m	>5	<1	<1	<1
Nickel	ppm	ASTM D5185m	>4	<1	<1	<1
Titanium	ppm	ASTM D5185m	>2	<1	<1	0
Silver	ppm	ASTM D5185m	>2	0	<1	0
Aluminum	ppm	ASTM D5185m	>15	5	6	2
Lead	ppm	ASTM D5185m	>25	0	<1	<1
Copper	ppm	ASTM D5185m	>100	2	2	41
Tin	ppm	ASTM D5185m	>4	0	<1	2
Vanadium	ppm	ASTM D5185m		0	<1	0
O a alma i una		AOTH DELOF				0
Cadmium	ppm	ASTM D5185m		0	<1	0
ADDITIVES	ppm	method	limit/base	0 current	<1 history1	0 history2
	ppm ppm		limit/base			-
ADDITIVES		method	0	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	0	current 0	history1 <1	history2 2
ADDITIVES Boron Barium	ppm ppm	method ASTM D5185m ASTM D5185m	0 0 60	current 0 0	history1 <1 <1	history2 2 2
ADDITIVES Boron Barium Molybdenum	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	current 0 0 59	history1 <1 <1 61	history2 2 2 57
ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	ourrent 0 0 59 0	history1 <1 <1 61 <1	history2 2 2 57 <1
ADDITIVES Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	current 0 0 59 0 885	history1 <1 <1 61 <1 921	history2 2 2 57 <1 833
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	Current 0 0 59 0 885 1037	history1 <1 <1 61 <1 921 1090	history2 2 2 57 <1 833 1041
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	Current 0 59 0 885 1037 971	history1 <1 61 <1 921 1090 1010	history2 2 2 57 <1 833 1041 954
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270	current     0     59     0     885     1037     971     1174	history1   <1   61   <1   921   1090   1010   1245	history2     2     2     57     <1     833     1041     954     1145
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	Current 0 59 0 885 1037 971 1174 2905	history1 <1 <1 61 <1 921 1090 1010 1245 3075	history2     2     2     57     <1     833     1041     954     1145     2493
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	Current 0 59 0 885 1037 971 1174 2905 Current	<1   <1   61   <1   921   1090   1010   1245   3075   history1	history2   2   57   <1   833   1041   954   1145   2493   history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 limit/base >25	current     0     0     59     0     885     1037     971     1174     2905     current     5	<1   <1   61   <1   921   1090   1010   1245   3075   history1	history2   2   57   <1   833   1041   954   1145   2493   history2   6
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method     ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 limit/base >25	current     0     0     59     0     885     1037     971     1174     2905     current     5     3	<1   <1   61   <1   921   1090   1010   1245   3075   history1   11   2	history2     2     57     <1     833     1041     954     1145     2493     history2     6     5
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method     ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>limit/base</b> >25	current     0     0     59     0     885     1037     971     1174     2905     current     5     3     14	<1   <1   61   <1   921   1090   1010   1245   3075   history1   11   2   15	history2   2   2   57   <1   833   1041   954   1145   2493   history2   6   5   1
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm <b>TS</b> ppm ppm	method     ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >20	current   0   59   0   885   1037   971   1174   2905   current   5   3   14	<1   <1   61   <1   921   1090   1010   1245   3075   history1   11   2   15   history1	history2   2   2   57   <1   833   1041   954   1145   2493   history2   6   5   1   history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm <b>TS</b> ppm ppm	method     ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >20	current   0   0   59   0   885   1037   971   1174   2905   current   5   3   14   current   0.5	<1   <1   61   <1   921   1090   1010   1245   3075   history1   11   2   15   history1   0.4	history2   2   2   57   <1   833   1041   954   1145   2493   history2   6   5   1   history2   0   0.4
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method     ASTM D5185m     ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <i>limit/base</i> >25 >20 <i>limit/base</i> >20	current     0     0     59     0     885     1037     971     1174     2905     current     5     3     14     current     0.5     9.8	<1   <1   61   <1   921   1090   1010   1245   3075   history1   11   2   15   history1   0.4   9.5	history2   2   2   57   <1   833   1041   954   1145   2493   history2   6   5   1   history2   0   0.4   9.2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method     ASTM D5185m     ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 20 225 20 <b>limit/base</b> >20 <b>limit/base</b> >20 30	Current   0   59   0   885   1037   971   1174   2905   current   5   3   14   current   0.5   9.8   20.9	<1   <1   61   <1   921   1090   1010   1245   3075   history1   11   2   15   history1   0.4   9.5   20.3	history2   2   2   57   <1   833   1041   954   1145   2493   history2   6   5   1   history2   0.4   9.2   20.4



# **OIL ANALYSIS REPORT**

VISUAL



	VICCIAL		motriou			inotory i	<b>,</b>
	White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
	Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
	Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
	Silt	scalar	*Visual	NONE	NONE	NONE	NONE
	Debris	scalar	*Visual	NONE	NONE	NONE	NONE
	_ Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
/23 - /		scalar	*Visual	NORML	NORML	NORML	NORML
Jan 11/23 Mar30/23 Nov16/23	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
	Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
	Free Water	scalar	*Visual	20.L	NEG	NEG	NEG
	FLUID PROPE Visc @ 100°C	cSt	method ASTM D445	limit/base	current 13.4	history1 13.5	history2 13.9
	GRAPHS	COL	A31101 D445	15.4	13.4	13.5	13.9
	Ferrous Alloys						
	60 T						
Jan 11/23 Mar30/23 Nov10/23	50 - chromium						
Jan 11/23 Mar30/23 Nov10/23	40 nickel						
	<b></b> <u></u> <u></u> <u></u> <u></u> <u></u> <u></u> <u></u> <u></u> <u></u> <u></u>						
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	0/21	/23-	)/23 - 1/23 -	3/23 -			
	May20/21 Dec1/21 0ct7/22	Jan 11/23	Mar30/23 Nov10/23	Nav16/23			
	Non-ferrous Metal			_			
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	0.21 1.21 22	/23	123-	/23			
	May20/21 Dec1/21 0ct7/22	Jan 11/23	Mar30/23 Nov10/23	Nov16/23			
	∠ Viscosity @ 100°C		~ ~	~	Paco Number		
	<sup>19</sup>			10	Base Number		
	18 - Abnormal				.0		
	17-			(B/H0			
	Di 16 Base 53 14			Base Number (mg KOH/g)	.0		
	E IS			mber (			
	12			Annu as	.0 -		
	13 Abnormal			<sup>re</sup> 2	.0-		
	12				.0		
		1/23	)/23 -			1/23	1/23
	May20/21 Dec1/21 0ct7/22	Jan 1 1/23	Mar30/23 Nov10/23	Nov16/23	May20/21 Dec1/21	Jan11/23 Mar20/23	Nov10/23
Laboratory Sample No. Lab Number Unique Number Test Package	: 06011818 : 10750962 : FLEET	d : 20   ed : 21   tician : We	Nov 2023 Nov 2023 s Davis	ov 2023 6200 Elm ov 2023 Sterling Height Davis US 4 Contact: Frank W			
discuss this sample report, Denotes test methods that a		7025 scc	pe of accrea	litation.			ak@gflenv.con (586)825-951 F: